

Claims

1. Heat shield on a support structure (3), in particular for use in a gas turbine combustion chamber or a gas turbine flame tube, with a number of heat shield elements (1, 2), which are configured and arranged on the support structure (3) such that they abut each other, leaving gaps in between, characterized in that the support structure has a peripheral direction and an axial direction (A), the heat shield elements (1, 2) abutting each other in the peripheral direction of the support structure (3) leaving a peripheral gap and in the axial direction of the support structure (3) leaving an axial gap and in that both the peripheral gaps and the axial gaps are sealed by sealing elements (13, 23, 33), the sealing elements (13, 22) sealing the axial gaps being at a different distance from the support structure (3) from the sealing elements sealing the peripheral gaps.
2. Heat shield according to claim 1, characterized in that the sealing elements (13, 22) sealing the axial gaps are arranged between the support structure (3) and the heat shield elements (1, 2).
3. Heat shield according to claim 1 or 2, characterized in that it comprises a number of element retainers (12, 25), which fix the heat shield elements (1, 2) on the support structure (3) both in the peripheral direction and in the axial direction (A).
4. Heat shield according to claim 3, characterized in that the element retainers include first element retainers (25) for fixing the heat shield elements (1, 2) in the peripheral direction of the support structure (3) and second element retainers (12) for fixing the heat shield elements (1, 2) in the axial direction (A) of the support structure, the second element retainers (12) being configured at the same time to retain the sealing elements (13) in the axial gaps.

5. Heat shield according to claim 4, characterized in that

- the support structure (3) has peripheral grooves (19) extending in the peripheral direction of the support structure (3),
- the second element retainers are configured as clamps (12) with a clamp opening (14) and a clamp section (15) facing away from the clamp opening (14),
- the clamp sections (15) of the clamps (12) facing away from the clamp opening (14) are inserted into a peripheral groove (19) in the support structure (3), such that at least part of the clamp (12) projects beyond the peripheral groove (19) to engage in a recess (10) in a heat shield element (1), thereby serving to fix the heat shield element (1) axially and
- the sealing elements (13) are inserted into the clamps (12).

6. Heat shield according to claim 5, characterized in that the clamp (12) has engagement elements (18) to engage in a sealing element (13) inserted into the clamp.

7. Heat shield according to claim 3, characterized in that

- the heat shield elements (1,2) each have a hot side (4) facing away from the support structure (3), which is suitable for exposure to a hot medium, a cold side (5) facing towards the support structure (3) and a number of peripheral surfaces (6, 7) connecting the hot side (4) to the cold side (5),
- a heat shield element (1, 2) has first peripheral surfaces (7) at two opposite sides, each abutting a corresponding first peripheral surface (7) of an adjacent heat shield element (1, 2) in the axial direction (A) of the support structure, leaving an axial gap;
- in the region of the edges between the cold side (5) and the first peripheral surfaces (7) there are recesses (10, 11, 23), which interact with the recess (10, 11, 23) of the respective opposite peripheral surface (7) of the adjacent heat shield element (1, 2) in the axial direction to form a holder for a sealing element (22) running in the peripheral direction of the support structure (3);
- a heat shield element (1, 2) has second peripheral surfaces (6) on two opposite sides, which each abut a corresponding sec-

ond peripheral surface (6) of an adjacent heat shield element (1, 2) in the peripheral direction of the support structure (3), leaving a peripheral gap;

- the element retainers (25) engage in the second peripheral surfaces (6) of the heat shield elements (1, 2); and
- the second peripheral surfaces (6) are equipped with securing sections (24, 28), which prevent displacement of the heat shield element (1, 2) in relation to the element retainers (25) along the second peripheral surfaces (6).

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8. Heat shield according to claim 7, characterized in that the second peripheral surfaces (6) have grooves (8), in which engagement sections (26) of the element retainers (25) engage and in which studs (24, 28) are arranged such that they form a stop for the engagement sections (26) of the element retainers (25) in the axial direction (A) of the support structure (3).

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9. Heat shield element for attachment to a support structure (3), in particular for use in a heat shield according to claim 8, with

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- a hot side (4) to be turned away from a support structure (3), which is suitable for exposure to a hot medium,
- a cold side (5) to be turned towards the support structure (3) and
- a number of peripheral surfaces (6) connecting the hot side (4) to the cold side (5), which are provided to abut peripheral surfaces (6) of heat shield elements (1, 2) to be attached in an adjacent fashion in the peripheral direction of the support structure (3) leaving the peripheral gap and have grooves (8) for engagement with engagement sections (26) of element retainers (25), which retain the heat shield element (1, 2) on the support structure (3), characterized in that at least one stud (24, 28) is arranged in each groove (8), forming a stop for the engagement sections (26) of the element retainers (25).

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10. Heat shield element according to claim 9, characterized in that the at least one stud (28) only extends through part of the profile of the groove (8).

5 11. Heat shield element according to claim 9, characterized in that the at least one stud (24) extends through the entire profile of the groove (8).

10 12. Retaining element for use in a heat shield according to claim 8, with an engagement section (26) configured to engage in grooves (8) in heat shield elements (1, 2), characterized in that surface elements (32) are arranged on the engagement section (26), the surface normal of which run in the direction of expansion of the groove (8) on engagement
15 in the groove (8).

13. Combustion chamber with a heat shield according to one of claims 1 to 8.

20 14. Flame tube with a heat shield according to one of claims 1 to 8.

15. Gas turbine with a combustion chamber according to claim 13 or a flame tube according to claim 14.

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